

**Hydrogen Sulfide Drilling Operations Plan**  
**J. Cleo Thompson & James Cleo Thompson, Jr., L.P.**  
**Cortez '33' Well No. 1**

30-015-38960

1. All company and contract personnel admitted on location must be trained by a qualified H<sub>2</sub>S safety instructor to the following:
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Proper use of safety equipment and life support systems
  - D. Principle and operation of H<sub>2</sub>S detectors, warning system and briefing areas
  - E. Evacuation procedure, routes and first aid
  - F. Proper use of 30-minute pressure demand air pack
2. **H<sub>2</sub>S Detection and Alarm System**

H<sub>2</sub>S detectors and an audible alarm system will be located at the bell nipple, end of the flow line (mud pit) and on the derrick floor or doghouse.
3. **Windsock and/or Wind Streamers:**
  - A. Windsock/streamers to be placed at mudpit area high enough to be visible.
  - B. Windsock/streamers to be placed in briefing area high enough to be visible.
4. **Condition Flags and Signs:**
  - A. Warning sign to be placed on access to location
  - B. Flags will be displayed on sign at entrance to location.
    - *Green Flag*: normal, safe conditions
    - *Yellow Flag*: potential pressure/H<sub>2</sub>S danger
    - *Red Flag*: Danger, H<sub>2</sub>S is present in dangerous concentrations, only emergency personnel admitted to location
5. **Well Control Equipment**
  - A. See Exhibit F
6. **Communication:**
  - A. While working under masks, chalkboards will be used for communication.
  - B. Hand signals will be used where chalkboards are inappropriate.
  - C. Two-way radios will be used to communicate off location in case of emergency help is required. In most cases cellular phones will be available in the drilling foreman's trailer/living quarters.
7. **Drillstem Testing:**

No DSTs or cores are planned at this time
8. Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
9. If H<sub>2</sub>S is encountered, mud system will be altered as necessary to maintain control of the formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

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**Emergency Procedures**

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must:

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release
- Use the "Buddy System" to ensure no injuries occur during the response.
- Take precautions to avoid personal injury during this operation
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the following:
  - ✓ Detection of H<sub>2</sub>S,
  - ✓ Measures for protection against the gas,
  - ✓ Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to sulfur dioxide, SO<sub>2</sub>. Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of gas.

**Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 (Air=1)	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21(Air=1)	2 ppm	N/A	1,000 ppm

**Contacting Authorities**

J. Cleo Thompson & James Cleo Thompson, Jr., L.P. personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. J. Cleo Thompson & James Cleo Thompson, Jr., L.P. 's response will be in coordination with the State of New Mexico's Hazardous Materials Emergency Plan" (HMER).

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J. Cleo Thompson, Odessa Office

432-550-8887

**Key Personnel**

Name	Title	Office	Mobile
Jim Stevens	Operations Manager	432-550-8887	432-664-2917
Doug Dietrich	Engineer	432-550-8887	432-664-2549
Jeff Bryden	Geologist	432-550-8887	432-661-0171
Johnnie Holder	Drilling Superintendent	432-550-8887	432-664-2891
Gary Moreau	Pumper		575-631-5643

**Artesia**

Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

**Carlsbad**

Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
US Bureau of Land Management	575-887-6544

**Santa Fe**

New Mexico Emergency Response Commission (Santa Fe)	505-476-9600
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

**National**

National Emergency Response Center (Washington, D.C.)	800-424-8802
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**Medical**

Flight for Life – 4000 24 <sup>th</sup> St., Lubbock, TX	806-743-9911
Aerocare – R3, Box 49F, Lubbock, TX	806-747-8923
Med Flight Air Amb. – 2301 Yale Blvd S.E., #D3, Albuquerque, NM	505-842-4433
SB Air Med Service – 2505 Clark Carr Loop S.E., Albuquerque, NM	505-842-4949

**Other**

Boots & Coots IWC	800-256-9688 or 281-931-8884
Cudd Pressure Control	432-699-0139 or 432-563-3356
Halliburton	575-746-2757
B.J. Services	575-746-3569